SAMPLING PLAN FOR

RICHARDSON FLAT TAILINGS

SUMMIT COUNTY, UTAH

TDD F08-8903-06 - PAN FUT0039HCA

EPA ID UTD980952840

EPA SITE PROJECT OFFICER: THOMAS BURNS

E & E PROJECT OFFICER: KEVIN MACKEY

PREPARED BY: SUSAN KENNEDY

REVIEWED BY: KAM FORD

SUBMITTED TO: LES SPRENGER, FIT-RPO
THOMAS BURNS, NPL COORDINATOR

DATE SUBMITTED: JUNE 15, 1989

REGION VIII

ENVIRONMENTAL PROTECTION AGENCY

FIELD INVESTIGATION TEAM

APPROVAL PAGE

Kevin Mackey — 6-15-89

ECOLOGY AND ENVIRONMENT, INC.
FIT PROJECT OFFICER — DATE

Kim Ford — 6-15-89

ECOLOGY AND ENVIRONMENT, INC.
FIT OFFICE MANAGER — DATE

EPA FIT REGIONAL PROJECT OFFICER — DATE

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SAMPLING PLAN
RICHARDSON FLAT TAILINGS
SUMMIT COUNTY, UTAH
TDD F08-8903-06 - PAN FUT0039HCA
EPA ID UTD980952840

1.0 INTRODUCTION

Under the provisions of Technical Directive Document (TDD) F08-8903-06, Region VIII U.S. Environmental Protection Agency (EPA) tasked the Ecology and Environment, Inc. Field Investigation Team (FIT) to conduct follow-up field investigation work at Richardson Flat Tailings in Summit County, Utah. The follow-up work is designed to support EPA efforts to respond to comments on the nomination of the site to the National Priorities List under the current Hazard Ranking System.

2.0 OBJECTIVES

The objectives of the follow-up field activities at Richardson Flat Tailings are to:

- Define the surface water drainage patterns throughout the site area;
- Verify a release of inorganic contaminants into Silver Creek;
- Identify source material contributing to metals contamination in Silver Creek.

3.0 BACKGROUND

3.1 LOCATION AND SITE DESCRIPTION

Richardson Flat Tailings lies within the northwest quarter of Section 1 and the northeast quarter of Section 2, Township 2 South, Range 4 East, Salt Lake Meridian, in Summit County, Utah. The tailings cover an area of approximately 160 acres on a topographic depression located one and a half miles northeast of the town of Park City (Figure 1).

The mill tailings at Richardson Flat came from the Keetley Ontario Mine and other metal mining operations currently owned by United Park City Mines (UPCM). The most recent use of the area for tailings disposal was from 1975 to 1981. During that time UPCM had all its mining properties leased to either Park City Ventures or Noranda Mining, Inc. who constructed and operated milling facilities on UPCM properties. In May of 1974, the Utah Division of Health Water Pollution Committee approved plans by Park City Ventures to construct an embankment, dikes and a diversion ditch to contain mill tailings deposited on Richardson Flat.

3.2 PREVIOUS WORK

The original FIT site investigation at Richardson Flat Tailings was conducted during the summer of 1985. One background monitoring well was installed by the FIT as part of the investigation. The background well and two existing UPCM wells located at the base of the dam were sampled. In addition, six surface water samples, one surface soil sample, two subsurface soil samples, four surface tailings samples and four subsurface tailings samples were collected during the 1985 sampling effort. Findings of the original field investigation are discussed in the Report of Sampling Activities (TDD R8-8505-27) and the Analytical Results Report (TDD R8-8508-07).

In July, 1986 the FIT conducted high-volume air sampling at the site. A report of air sampling activities (TDD R8-8605-12), and an analytical results of air sampling report (TDD R8-8608-05) provide details of field work and data results.

The FIT submitted an HRS package for Richardson Flat Tailings on September 3, 1987. Based on documented observed releases of inorganic contaminants to surface water and air, the site received an overall migration score exceeding the 28.5 threshold value required for nomination to the NPL. Proposal of Richardson Flat Tailings to the NPL appeared in the Federal Register on June 14, 1988.

3.3 SITE GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

3.3.1 Geology

Richardson Flat Tailings lies within a broad, gently rolling flat north of Park City, identified as Parleys Park. Over half of the total area (approximately 35 square miles) of Parleys Park is underlain by unconsolidated deposits of a poorly sorted mixture of clay to cobble size material. The unconsolidated deposits, which are saturated to within a few feet of the ground surface, occur primarily along Silver and East Canyon Creeks and in the flats northwest of Quarry Mountain. The rest of the park is underlain by consolidated rocks including volcanics of Tertiary origin and Knight Conglomerate (Baker 1970).

3.3.2 Hydrogeology

Sources of water to wells in the Heber-Kamas-Park City area include the consolidated rocks as a principal source in the mountains, and unconsolidated alluvial fill as a major source in the valleys. Because few wells exist within Parleys Park, unconfined aquifer characteristics in this area are not well understood. There appear to be no well-defined beds of material of very high or very low permeability, and no indications of the existence of artesian conditions. The average saturated thickness is broadly estimated to be about 40 feet.

The general ground water flow direction corresponds with the regional surface water flow directions. Recharge to ground water in the unconsolidated deposits in Parleys Park comes from direct infiltration of precipitation, runoff from the mountains, and secondarily from subsurface inflow through consolidated rocks (Baker 1970).

3.3.3 Hydrology

Parleys Park is drained by East Canyon Creek and Silver Creek, both tributaries to the Weber River. Silver Creek which flows west of and near the northern extension of Richardson Flat Tailings has been channelized for irrigation purposes both upstream and downstream of the tailings. The nearest diversion from Silver Creek downstream of the tailings is the G.M. Pace ditch used for flood irrigation of alfalfa fields and pasture.

A diversion ditch has been constructed as part of the effort by Park City Ventures to contain tailings material deposited on Richardson Flat. Construction of the diversion ditch has altered the drainage pattern as depicted on the 1955 USGS topographic map (Figure 1). The diversion ditch originates east of the tailings and terminates near the embankment at the northwest portion of the tailings. Figure 2 depicts the course of the diversion ditch as viewed on an oblique aerial photograph provided by EPA Environmental Monitoring Systems Laboratory (EMSL), dated June 1984.

Normal annual total precipitation for Richardson Flat is reported between 16 and 20 inches (adapted by Baker 1970 from U.S. Weather Bureau 1963).

4.0 FIELD OPERATIONS

4.1 CONCEPT OF OPERATIONS

4.1.1 Onsite Reconnaissance

The FIT will conduct a detailed onsite reconnaissance prior to commencing sample collection. The purpose of the reconnaissance will be to: (1) define surface water drainage patterns throughout the area; (2) document any surface runoff from the tailings; (3) identify seeps or any other signs of non-containment of the tailings impoundment; (4) document the occurrence of tailings material beyond the periphery of the tailings impoundment (as defined by the diversion ditch, diking and embankment).

4.1.2 Sample Collection

The proposed sampling involves the collection of five surface water and five sediment samples from Silver Creek, three surface water/sediment samples from the diversion ditch, and two surface water/sediment samples from the marsh located at the toe of the embankment. Opportunity surface water/sediment samples will be collected at the discretion of the site project officer. In addition, water samples will be collected from any seeps encountered along the dike or dam embankments.

Three solid matrix samples will be collected from surficial material located south and west of the diversion ditch, and two solid matrix samples will be collected from tailings deposited along the west bank of Silver Creek ("floodplain tailings"). Opportunity solid matrix samples will be collected at the discretion of the site project officer. Proposed sample locations are illustrated on Figure 2.

4.1.3 Analytical Support

Supplementary sediment samples will be collected from the diversion ditch termination point, throughout the wetland area at the base of the embankment and along the surface channel from the wetland into Silver Creek. Sediment samples will be shipped to the Region VIII FIT laboratory for analysis using the X-ray fluorescence spectrometer. Resultant data will be used to identify contaminant flow patterns and to supplement data provided through the Contract Laboratory Program (CLP) in interpreting contaminant attribution.

4.1.4 Personnel and Schedule

The FIT will consist of the following members:

Project Officer/Quality Assurance Officer: Kevin Mackey
Site Safety Officer: Steve Yarbrough
Sampler: Dan Kenney

The sampling effort is tentatively scheduled for July 6, 7 and 8, 1989.

4.1.5 Safety

A hotline and personnel decontamination station will be established after site reconnaissance. Level D protection is expected to be adequate, however, the FIT crew will be prepared to upgrade to Level C in the event of high winds. All sampling personnel will be familiar with the site safety plan and will be briefed of hazards associated with the site prior to commencing field activities. The project officer will have available at the site a copy of all SOP's referenced in this report.

4.1.6 Access and Logistics

Access to the site will be arranged by EPA Regional Counsel. All safety and operational equipment will be provided and transported by FIT.

Samples will be shipped via Federal Express in Salt Lake City or Denver under proper chain of custody. Split samples will be offered to the site owners.

4.2 SAMPLE LOCATIONS

Samples to be collected and analyzed through the Contract Laboratory Program (CLP) include ten surface water samples, ten sediment samples, and five tailings samples as depicted on Figure 2. All surface water samples will be collected in double volume; one aliquot will be filtered and the other aliquot will remain unfiltered. Table 1 describes the sample locations and rationales for sampling. Additional samples will be collected at the discretion of the site project officer.

Surface water/sediment samples RFT-SW-1/SE-1, RFT-SW-2/SE-2 and RFT-SW-3/SE-3 will be collected from Silver Creek upstream of the railroad trestle. RFT-SW-1/SE-1 will serve as the upstream background location. RFT-SW-2/SE-2 and RFT-SW-3/SE-3 will be collected to determine contribution of contaminants from lateral sources.

RFT-SW-4/SE-4 will be collected from the diversion ditch upgradient of any influence from tailings material if possible, thus serving as an upstream background ditch sample. RFT-SW-5/SE-5 and RFT-SW-6/SE-6 will be collected to determine whether contaminants are being conveyed by the ditch.

Samples RFT-SW-7/SE-7 and RFT-SW-8/SE-8 will be collected along the surface water channel within the marsh, leading from the diversion ditch to Silver Creek, to evaluate any contaminant migration into this area.

RFT-SW-9/SE-9 will be collected from Silver Creek on the immediate south side of the U.S. Highway 40 culvert, and RFT-SW-10/SE-10 will be collected downstream from the north side of the U.S. Highway 40 culvert. Both samples will serve to evaluate contaminant migration into Silver Creek.

Three samples (RFT-TA-1, RFT-TA-2 and RFT-TA-3) will be collected from surface material present on the south side of the diversion ditch to characterize the tailings in this area. Two samples (RFT-TA-4 and RFT-TA-5) will be collected from tailings material deposited along the west bank of Silver Creek for characterization purposes as well.

Determination of exact sample locations will depend upon conditions evident during site reconnaissance (and results of analytical support data). Opportunity samples may be collected for any sampling parameter.

4.3 SAMPLING METHODS

The FIT will collect samples using methods described in FIT SOP III-2, Chapters 8 and 9. Surface water samples will be collected directly into sample containers beginning at the most downgradient location and proceeding upstream. Double volume surface water samples will be collected at each designated location (including any opportunity seep samples) for the purpose of providing both a filtered and non-filtered sample. A barrel-filtering device equipped with 0.45 micron pore size filters will be used to filter surface water sample aliquots. All water matrix samples will be preserved with 5 milliliters of nitric acid to a pH less than 2. The nitric acid will be diluted in a 1:1 solution with deionized water.

Sediment samples will be collected as grab samples using decontaminated stainless steel spoons or disposable plastic scoops. Sediment sample collection will immediately follow surface water sample collection at each corresponding location. Again, when collecting surface water and sediment samples from a flowing water body, the FIT will begin at the most downgradient location and proceed upstream.

Surface tailings samples will be collected as grab samples from a depth between ground surface and two feet using disposable plastic scoops or decontaminated stainless steel spoons. Sample preservation and bottle requirements for all samples are outlined in Appendix A.

4.4 CONTROL OF CONTAMINATED MATERIALS

Contaminated materials derived during sampling will be evaluated in accordance with guidelines discussed in FIT SOP III-2, Chapter 13. Any hazardous waste determined present will be disposed of according to state and federal regulations.

4.5 ANALYTICAL PARAMETERS

Table 2 is the Sample Plan Check List detailing the sample parameters. All samples will be shipped to the assigned CLP laboratory and analyzed for total metals and mercury. A special analytical services (SAS) request has been submitted to included sieving sediment samples using an 80 mesh (1/8 inch) sieve prior to analysis. This additional measure is being taken to ensure uniformity of particle size for comparability purposes.

All samples except analytical support samples will be analyzed with CLP accuracy and precision in accordance with the CLP Statement of Work and the Functional Guidelines for Reviewing Inorganic Data.

Analytical support samples will be analyzed for selected metals using the Region VIII Tracor Spectrace 6000 X-ray fluorescence spectrometer according to guidance outlined in FIT SOP VI-2. Ten to twenty percent of the analytical support samples will be split for confirmation analysis through the CLP.

4.6 FIELD QUALITY CONTROL PROCEDURES

All samples will be preserved as described in FIT SOP III-2. Calibration and operation of pH and conductivity meters will follow

instrument manufacturer's instructions and FIT SOP III-2, Chapter 6. Equipment will be decontaminated prior to each sample collection using methods described in FIT SOP III-2, Chapter 11.

The following types of samples will be provided for data quality assurance.

- A field decontamination blank water sample will be prepared by pouring Baker Instra-Analyzed metals-free water through the barrel filter then into the sample container. Five milliliters of nitric acid (1:1 solution) will be added to obtain a pH less than 2. The blank sample will serve as an accuracy check for decontamination procedures and for laboratory accuracy.

- Representative and comparable background (upgradient) samples will be collected from appropriate locations.

- One duplicate surface water sample will be collected to fulfill field quality assurance protocol.

- Split samples will be offered to potentially responsible parties.

4.7 CHAIN OF CUSTODY

After collection and identification, all samples will be handled in strict accordance with chain of custody protocol prescribed by the NEIC Procedures Manual for the Evidence Audit of Enforcement Investigation by Contractor Evidence Audit Teams, April, 1984 (EPA-330/9-81-003R).

5.0 REPORTING

After completion of follow-up field activities and receipt of laboratory results, a report discussing sampling activities, analytical data and overall findings will be submitted to EPA Region VIII.

6.0 REFERENCES

Baker, C. H., Jr., 1970. Water Resources of the Heber-Kamas-Park City Area North Central Utah. Utah Dept. of Nat. Res. Tech. Publ. No. 27.

Ecology and Environment, Inc., 9/30/85. Sampling Activities Report for Richardson Flat Tailings. TDD R8-8505-27.

Ecology and Environment, Inc., 10/25/85. Analytical Results Report for Richardson Flat Tailings. TDD R8-8508-07.

Ecology and Environment, Inc., 9/11/86. Air Sampling Activities Report for Richardson Flat Tailings. TDD R8-8605-12.

Ecology and Environment, Inc., 9/9/87. Air Analytical Results Report for Richardson Flat Tailings. TDD R8-8608-05.

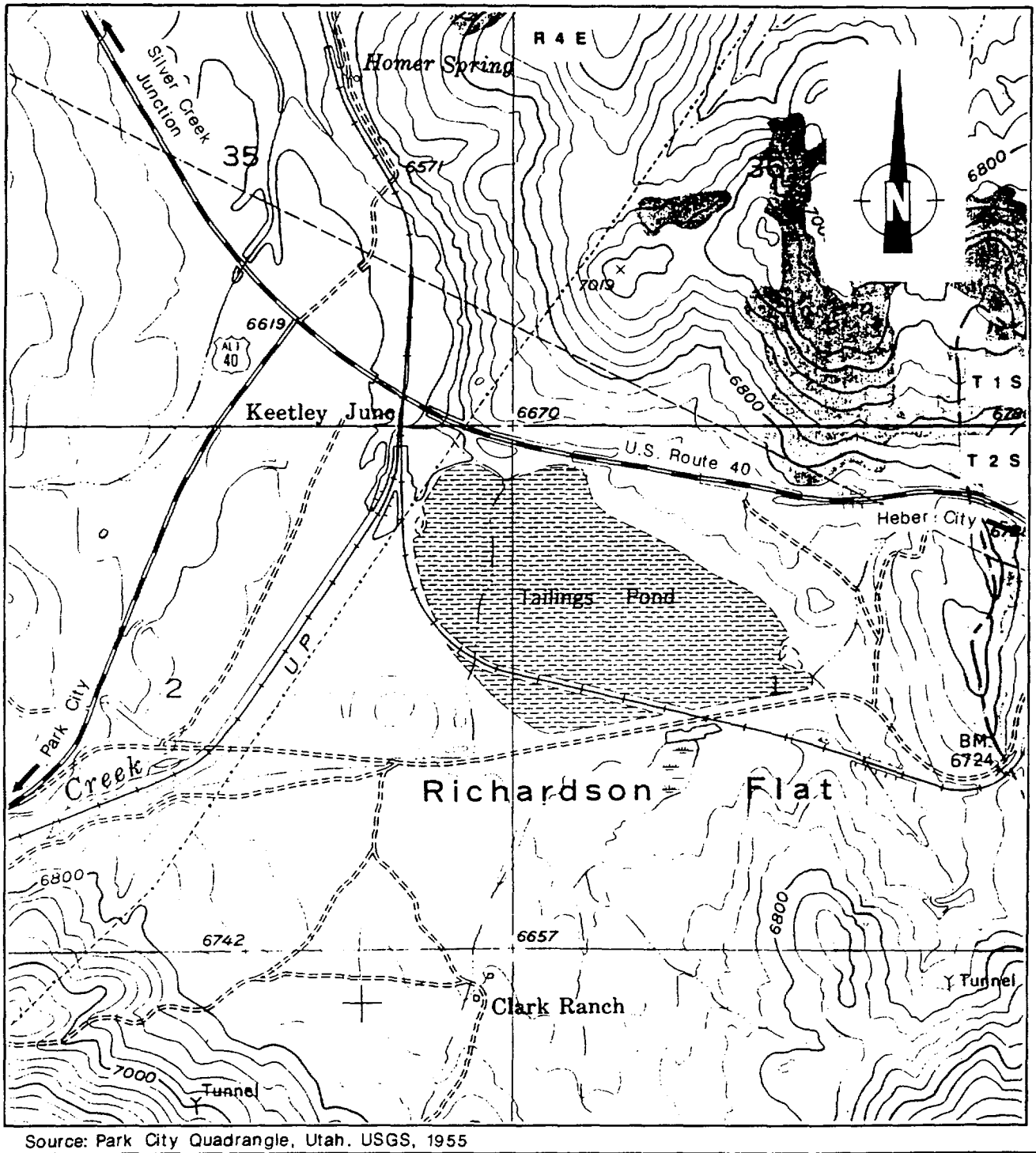
Ecology and Environment, Inc., April, 1989. Standard Operating Procedures for Field Operations at Hazardous Waste Sites - SOP III-2.

Ecology and Environment, Inc., 1989. Standard Operating Procedures for FASP XRF Method--Screening for Metals in Soil/Solid Samples - SOP VI-2.

USEPA Contract Laboratory Program, July, 1987. Statement of Work, No. 787 for Inorganics Analysis; Multimedia, Multiconcentration.

USEPA Hazardous Site Control Division, 1985. USEPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analysis. TDD HQ-8410-01.

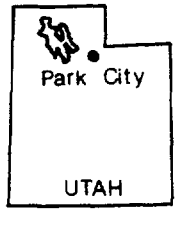
U.S. Weather Bureau, 1963. Normal Annual and May-September Precipitation (1931-60) for the State of Utah: Map of Utah, Scale 1:50,000.



Source: Park City Quadrangle, Utah. USGS, 1955

0 1/2 1 Mile

LOCATION MAP



FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES
TASK REPORT TO THE E.P.A.

TITLE:

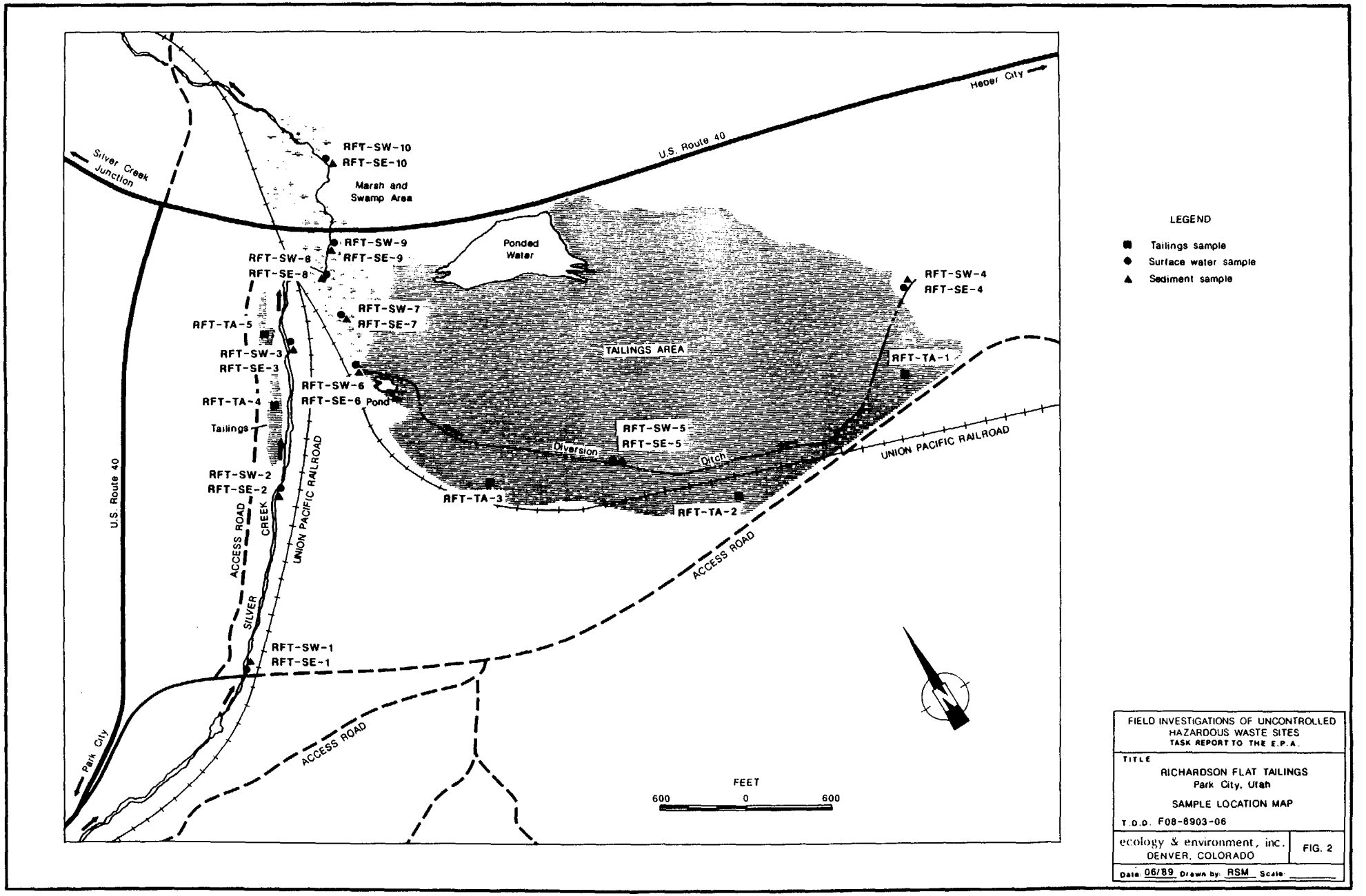
RICHARDSON FLAT TAILINGS
Park City, Utah
SITE LOCATION MAP

T.D.D. F08-8903-06

ecology & environment, inc.
DENVER, COLORADO

FIG. 1

Date: 06/89 Drawn by: RSM Scale: _____



FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES
TASK REPORT TO THE E.P.A.

TITLE

RICHARDSON FLAT TAILINGS
Park City, Utah

SAMPLE LOCATION MAP

T.D.D. F08-8903-06

ecology & environment, inc.
DENVER, COLORADO

FIG. 2

Date: 06/89 Drawn by: RSM Scale: _____

TABLE 1
SAMPLE TYPES, LOCATIONS AND RATIONALES
RICHARDSON FLAT TAILINGS
SUMMIT COUNTY, UTAH
TDD #F08-8903-06 - PAN #FUT0039HCA

SAMPLE MATRIX	SAMPLE #	LOCATION	RATIONALE
Surface Water	RFT-SW-1A*	Silver Creek at its intersection with access road	Upstream background surface water sample
	RFT-SW-1B**	Silver Creek intersection with access road	Upstream background surface water sample
	RFT-SW-2A	Silver Creek midway between access road and RR trestle	Determine contribution of contaminants from lateral sources
	RFT-SW-2B	Silver Creek midway between access road and RR trestle	Determine contribution of contaminants from lateral sources
	RFT-SW-3A	Silver Creek upstream of RR trestle	Determine contribution of contaminants from lateral sources
	RFT-SW-3B	Silver Creek upstream of RR trestle	Determine contribution of contaminants from lateral sources
	RFT-SW-4A	Diversion ditch upstream of tailings	Upstream background surface water sample
	RFT-SW-4B	Diversion ditch upstream of tailings	Upstream background surface water sample
	RFT-SW-5A	Diversion ditch midway between origination and termination	Determine whether contaminants are being conveyed by the ditch
	RFT-SW-5B	Diversion ditch midway between origination and termination	Determine whether contaminants are being conveyed by the ditch
	RFT-SW-6A	Diversion ditch at point of discharge or termination	Determine whether contaminants are being conveyed by the ditch
	RFT-SW-6B	Diversion ditch at point of discharge or termination	Determine whether contaminants are being conveyed by the ditch
	RFT-SW-7A	Marsh - between termination of diversion ditch and Silver Creek	Evaluate contaminant migration into marsh
	RFT-SW-7B	Marsh - between termination of diversion ditch and Silver Creek	Evaluate contaminant migration into marsh

TABLE 1 CONT.
SAMPLE TYPES, LOCATIONS AND RATIONALES
RICHARDSON FLAT TAILINGS
SUMMIT COUNTY, UTAH
TDD #F08-8903-06 - PAN #FUT0039HCA

SAMPLE MATRIX	SAMPLE #	LOCATION	RATIONALE
Surface Water	RFT-SW-8A	Marsh - between termination of diversion ditch and Silver Creek	Evaluate contaminant migration into marsh
	RFT-SW-8B	Marsh - between termination of diversion ditch and Silver Creek	Evaluate contaminant migration into marsh
	RFT-SW-9A	Silver Creek - immediately south of U.S. Hwy 40 culvert	Evaluate contaminant migration into Silver Creek
	RFT-SW-9B	Silver Creek - immediately south of U.S. Hwy 40 culvert	Evaluate contaminant migration into Silver Creek
	RFT-SW-10A	Silver Creek - downstream from U.S. Hwy 40 culvert	Evaluate contaminant migration into Silver Creek
	RFT-SW-10B	Silver Creek - downstream from U.S. Hwy 40 culvert	Evaluate contaminant migration into Silver Creek
Sediment	RFT-SE-1	Silver Creek at its intersection with access road	Upstream background sediment sample
	RFT-SE-2	Silver Creek midway between access road and RR trestle	Determine contribution of contaminants from lateral sources
	RFT-SE-3	Silver Creek upstream of RR trestle	Determine contribution of contaminants from lateral sources
	RFT-SE-4	Diversion ditch upstream of tailings	Upstream background sediment sample
	RFT-SE-5	Diversion ditch midway between origination and termination	Determine whether contaminants are being conveyed by the ditch
	RFT-SE-6	Diversion ditch at point of discharge or termination	Determine whether contaminants are being conveyed by the ditch
	RFT-SE-7	Marsh - between termination of diversion ditch and Silver Creek	Evaluate contaminant migration into marsh
	RFT-SE-8	Marsh - between termination of diversion ditch and Silver Creek	Evaluate contaminant migration into marsh
	RFT-SE-9	Silver Creek - immediately south of U.S. Hwy 40 culvert	Evaluate contaminant migration into Silver Creek

TABLE 1 CONT.
SAMPLE TYPES, LOCATIONS AND RATIONALES
RICHARDSON FLAT TAILINGS
SUMMIT COUNTY, UTAH
TDD #F08-8903-06 - PAN #FUT0039HCA

SAMPLE MATRIX	SAMPLE #	LOCATION	RATIONALE
Sediment	RFT-SE-10	Silver Creek - downstream from U.S. Hwy 40 culvert	Evaluate contaminant migration into Silver Creek
Tailings	RFT-TA-1	Surface tailings - SW side of diversion ditch	Characterize surficial material present outside of surface impoundment
	RFT-TA-2	Surface tailings - SW side of diversion ditch	Characterize surficial material present outside of surface impoundment
	RFT-TA-3	Surface tailings - SW side of diversion ditch	Characterize surficial material present outside of surface impoundment
	RFT-TA-4	Surface tailings along west bank of Silver Creek	Characterize surficial material present on west bank of Silver Creek
	RFT-TA-5	Surface tailings along west bank of Silver Creek	Characterize surficial material present on west bank of Silver Creek

* A denotes filtered sample
** B denotes unfiltered sample

TABLE 2

SAMPLE PLAN CHECK LIST

REGION VIII

Site Name: Richardson Flat Tailings — TDD Number: F08-8903-06

Address: — Project Team Leader: Kevin Mackey

City: Park City, UT County: Summit — Sampling Date: July 6, 7, 8, 1989

Sample Location	Sample Type	Field Parameters					Laboratory Parameters														
		Temp	pH	Cond	DO	Special	Task 1&2 Metals	Task 3 Cyanide	Task 3 Sulfide	Task 3 Ammonia	Special Anions	Special NO3&NO2	Special Inorganic	VOA	B/N/A Extract	Pesticide	Special Organic	Split	Dup	Spike	Blank
RFT-SW-1A	Surface water	✓	✓	✓		filtered	✓														background
RFT-SW-1B	↓	✓	✓	✓		not filtered	✓														background
RFT-SW-2A		✓	✓	✓		filtered	✓														
RFT-SW-2B		✓	✓	✓		not filtered	✓														
RFT-SW-3A		✓	✓	✓		filtered	✓														
RFT-SW-3B		✓	✓	✓		not filtered	✓														
RFT-SW-4A		✓	✓	✓		filtered	✓														background
RFT-SW-4B		✓	✓	✓		not filtered	✓														background
RFT-SW-5A		✓	✓	✓		filtered	✓														
RFT-SW-5B		✓	✓	✓		not filtered	✓														
RFT-SW-6A		✓	✓	✓		filtered	✓														
RFT-SW-6B	↓	✓	✓	✓		not filtered	✓														

TABLE 2 (cont.)

SAMPLE PLAN CHECK LIST

REGION VIII

Site Name: Richardson Flat Tailings

Address:

City: Park City, UT County: Summit

TDD Number: F08-8903-06

Project Team Leader: Kevin Mackey

Sampling Date: July 6, 7, 8, 1989

Sample Location	Sample Type	Field Parameters					Laboratory Parameters															
		Temp	pH	Cond	DO	Special	Task 1&2 Metals	Task 3 Cyanide	Task3 Sulfidr	Task3 Ammonia	Special Anions	Special NO3&NO2	Special Inorganic	VOA	B/N/A Extract	Pesticide	Special Organic	Split	Dup	Spike	Blank
RFT-SW-7A	Surface water	✓	✓	✓		filtered	✓														
RFT-SW-7B		✓	✓	✓		not filtered	✓														
RFT-SW-8A		✓	✓	✓		filtered	✓														
RFT-SW-8B		✓	✓	✓		not filtered	✓														
RFT-SW-9A		✓	✓	✓		filtered	✓														
RFT-SW-9B		✓	✓	✓		not filtered	✓														
RFT-SW-10A		✓	✓	✓		filtered	✓														
RFT-SW-10B		✓	✓	✓		not filtered	✓														
RFT-SW-11A		✓	✓	✓		filtered	✓												✓		duplicate RFT-SW-7A
RFT-SW-11B		✓	✓	✓		not filtered	✓												✓		duplicate RFT-SW-8B
RFT-SW-12A		✓	✓	✓		filtered	✓														decontamination blank
RFT-SW-12B	↓	✓	✓	✓		not filtered	✓														decontamination blank

TABLE 2 (cont.)

SAMPLE PLAN CHECK LIST

REGION VIII

Site Name: Richardson Flat Tailings

Address:

City: Park City, UT County: Summit

TDD Number: F08-8903-06

Project Team Leader: Kevin Mackey

Sampling Date: July 6, 7, 8, 1989

Sample Location	Sample Type	Field Parameters					Laboratory Parameters															
		Temp	pH	Cond	DO	Special	Task 1&2 Metals	80-mesh Sieve	Task3 Sulfide	Task3 Ammonia	Special Anions	Special NO3&NO2	Special Inorganic	VOA	B/N/A Extract	Pesticide	Special Organic	Split	Dup	Spike	Blank
RFT-SE-1	Sediment		✓				✓	✓													background
RFT-SE-2	↓		✓				✓	✓													
RFT-SE-3			✓				✓	✓													
RFT-SE-4			✓				✓	✓													background
RFT-SE-5			✓				✓	✓													
RFT-SE-6			✓				✓	✓													
RFT-SE-7			✓				✓	✓													
RFT-SE-8			✓				✓	✓													
RFT-SE-9			✓				✓	✓													
RFT-SE-10	↓		✓				✓	✓													

TABLE 2 (cont.)

SAMPLE PLAN CHECK LIST

REGION VIII

Site Name: Richardson Flat Tailings

Address:

City: Park City, UT County: Summit

TDD Number: F08-8903-06

Project Team Leader: Kevin Mackey

Sampling Date: July 6, 7, 8, 1989

Sample Location	Sample Type	Field Parameters					Laboratory Parameters														
		Temp	pH	Cond	DO	Special	Task 1&2 Metals	Task 3 Cyanide	Task 3 Sulfide	Task 3 Ammonia	Special Anions	Special NO3&NO2	Special Inorganic	VOA	B/N/A Extract	Pesticide	Special Organic	Split	Dup	Spike	Blank
RFT-TA-1	Tailings		✓				✓														
RFT-TA-2	↓		✓				✓														
RFT-TA-3			✓				✓														
RFT-TA-4			✓				✓														
RFT-TA-5			✓				✓														

APPENDIX A

SAMPLE PRESERVATION AND BOTTLE REQUIREMENTS

SAMPLE PRESERVATION AND BOTTLE REQUIREMENTS

MATRIX	PARAMETER	# CONTAINERS PER SAMPLE	CONTAINER	PRESERVATION
Low Water	Metals	1	1 liter poly bottle	HNO_3 to pH <2 Cool to 4°C
Low Solid	Metals	1	8 ounce glass jar	Cool to 4°C
Medium Water	Metals	1	16 ounce glass jar	No preservatives or cooling
Medium Solid	Metals	1	8 ounce glass jar	No cooling